

## **REMARKS**

### **STATUS OF CLAIMS**

Claims 1-57 are pending in the application.

Claims 1-57 stand rejected by the Examiner.

Reconsideration of the present Application is respectfully requested.

### **Remarks**

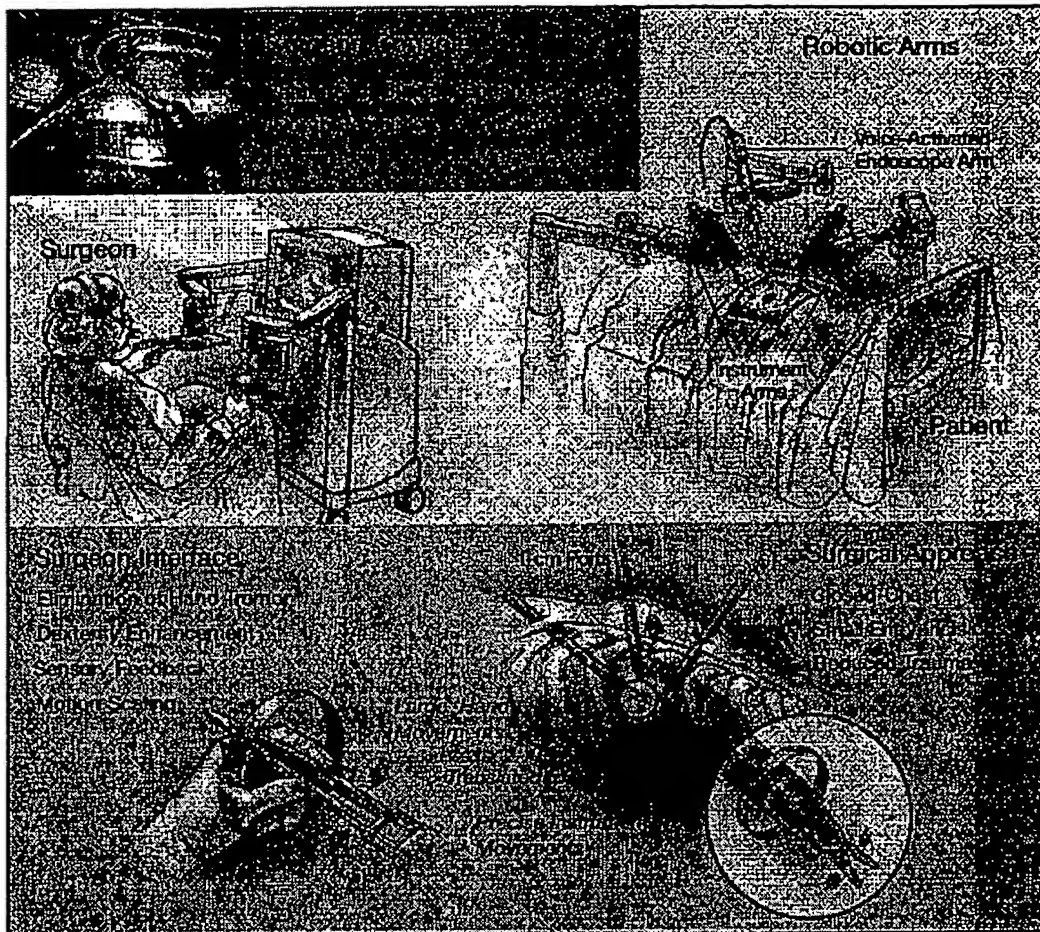
Claims 1-57 are presently rejected under 35 U.S.C. 102(b) as being anticipated by an article to Mack, titled "Minimally Invasive and Robotic Surgery," purportedly published in 2001.

Claims 1, 10, 12, 14, 15, and 18 of the present application are independent claims, with each of the remaining claims depending from one of these independent claims.

The Examiner has asserted that each claim of the present invention is anticipated by the article authored by Mack, "Minimally Invasive and Robotic Surgery." Mack is a summary article providing a broad brush summary of the state of surgery circa the writing of the article.

The Examiner relies on none of the written text of the article, which provides no specific disclosure, but rather on a single figure contained in the article ("see fig. on page 571"), shown below:

**Figure. Endoscopic Surgery With a Robotic System**



The use of robotics or "computer assistance" enhances the performance of complex endoscopic procedures, such as coronary artery bypass graft surgery.

### Anticipation Under 35 USC §102(b)

"A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." *See, M.P.E.P. §2131 citing Verdegall Bros. v. Union Oil Co. of California, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987).*

**Rejection of Claims 1-9 as Anticipated Under 35 USC §102(b) by Mack**

Claim 1 recites:

A method of controlling a robotically driven surgical instrument for a surgeon comprising the steps of: locating a controller robot between a handle and the surgical instrument; sensing incident tremor force components applied by a surgeon to the handle; modulating the incident tremor force components to generate modulated tremor force commands; *and applying through the controller robot the modulated tremor force command* onto the surgical instrument.

[Emphasis added].

The Figure of Mack includes the notation “Elimination of hand tremor”, which is the only aspect of the figure which can in any fashion be related to the present invention. The elimination of hand tremor at a minimum prevents any force associated with any tremor from being applied, as the underlying tremor has been eliminated, and accordingly Mack does not disclose the “*applying through the controller robot the modulated tremor force command*” limitation of claim 1. Accordingly, Mack cannot anticipate claim 1 of the present invention. As claims 2-9 each depend from claim 1, and accordingly incorporate the limitations of claim 1, claims 2-9 accordingly include this limitation which is not taught by Mack, and Mack accordingly cannot anticipate any of these claims either.

**Rejection of Claims 10-11 as Anticipated Under 35 USC §102(b) by Mack**

Claim 10 recites:

A method of controlling a surgical instrument connected to a surgical robot comprising the steps of: locating a controller robot between a handle and a surgical instrument; sensing incident reflectance force from a sensor when the

surgical instrument is placed against body tissue; modulating the reflectance force components in the controller robot; and *outputting through the controller robot a modulated reflectance force on the handle*, wherein the modulation scaling step includes modulating the reflectance force in all degrees of freedom of the handle.

[Emphasis added].

The Figure of Mack includes the notation “Elimination of hand tremor”, which is the only aspect of the figure which can in any fashion be related to the present invention. The elimination of hand tremor at a minimum prevents any force associated with any tremor from being applied, as the underlying tremor has been eliminated, and accordingly Mack does not disclose the “*outputting through the controller robot a modulated reflectance force on the handle*” limitation of claim 10. The Examiner further posits “see table on page 570” as additional disclosure related to claim 10, however the closest material that Applicant can find is the simple “task titles” of Tremor Filtration and Force Feedback, however there is no disclosure whatsoever regarding what these titles mean, or how they are accomplished. Accordingly, the mere task titles provide no disclosure at all, let alone of the handling of specific components of operator physiology with respect to assisted surgery. Accordingly, Mack cannot anticipate claim 10 of the present invention. As claim 11 depends from claim 10, and accordingly incorporates the limitations of claim 10, claim 11 accordingly includes this limitation which is not taught by Mack, and Mack accordingly cannot anticipate this claim either.

**Rejection of Claims 12-13 as Anticipated Under 35 USC §102(b) by Mack**

Claim 12 recites:

A method of controlling a surgical instrument comprising the steps of: locating a controller robot between a handle and a surgical instrument; sensing incident

force components present on the handle generated by a surgeon's hand;  
modulating the incident force components in the controller robot; *and outputting through the controller robot a modulated force on the surgical instrument*,  
wherein the output step includes the further step of outputting the modulated force in all degrees of freedom of the surgical instrument.

The Figure of Mack includes the notation “Elimination of hand tremor”, which is the only aspect of the figure which can in any fashion be related to the present invention. The elimination of hand tremor at a minimum prevents any force associated with any tremor from being applied, as the underlying tremor has been eliminated, and accordingly Mack does not disclose the “*outputting through the controller robot a modulated force on the surgical instrument*” limitation of claim 12. The Examiner further posits “see table on page 570” as additional disclosure related to claim 12, however the closest material that Applicant can find is the simple “task titles” of Tremor Filtration and Force Feedback, however there is no disclosure whatsoever regarding what these titles mean, or how they are accomplished. Accordingly, the mere task titles provide no disclosure at all, let alone of the handling of specific components of operator physiology with respect to assisted surgery. Accordingly, Mack cannot anticipate claim 12 of the present invention. As claim 13 depends from claim 12, and accordingly incorporates the limitations of claim 12, claim 13 accordingly includes this limitation which is not taught by Mack, and Mack accordingly cannot anticipate this claim either.

**Rejection of Claim 14 as Anticipated Under 35 USC §102(b) by Mack**

Claim 14 recites:

A surgical robot comprising: a controller robot located between a handle and a surgical instrument; a sensor for sensing an incident reflectance force from the

sensor when the surgical instrument is contact with body tissue; a modulator for modulating the reflectance force components in the controller robot; and *a motor for outputting through the controller robot a modulated reflectance force on the handle.*

[Emphasis added].

The Figure of Mack includes the notation “Elimination of hand tremor”, which is the only aspect of the figure which can in any fashion be related to the present invention. The elimination of hand tremor at a minimum prevents any force associated with any tremor from being applied, as the underlying tremor has been eliminated, and accordingly Mack does not disclose the “*a motor for outputting through the controller robot a modulated reflectance force on the handle*” limitation of claim 14. Accordingly, Mack cannot anticipate claim 14 of the present invention.

**Rejection of Claims 15-17 as Anticipated Under 35 USC §102(b) by Mack**

Claim 15 recites:

A method of controlling a surgical instrument connected to a surgical robot for a surgeon comprising the steps of: receiving from a surgeon operator input from an input device indicating desired forces and deflections of a robotically controlled surgical instrument; transforming the input into control signals for directing the motion of and application of force by a robotically controlled surgical instrument; applying the control signals to a robotically controlled surgical instrument; monitoring forces applied to the robotically controlled surgical instrument by a patient's tissue in response to motion of the robotically controlled surgical instrument; and applying resistive forces correlating to the monitored forces to the

surgeon operator's input device in response to input provided by a surgeon operator; wherein said resistive forces vary sufficiently rapidly to emulate forces resultant from tremor motions of a surgical instrument against a patient's tissue.

[Emphasis added].

The Figure of Mack includes the notation “Elimination of hand tremor”, which is the only aspect of the figure which can in any fashion be related to the present invention. The elimination of hand tremor at a minimum prevents any force associated with any tremor from being applied, as the underlying tremor has been eliminated, and accordingly Mack does not disclose the “*applying resistive forces correlating to the monitored forces to the surgeon operator's input device in response to input provided by a surgeon operator; wherein said resistive forces vary sufficiently rapidly to emulate forces resultant from tremor motions of a surgical instrument against a patient's tissue*” limitation of claim 15. Accordingly, Mack cannot anticipate claim 15 of the present invention. As claims 16-17 each depend from claim 15, and accordingly incorporate the limitations of claim 15, claims 16-17 accordingly include this limitation which is not taught by Mack, and Mack accordingly cannot anticipate these claims either.

#### **Rejection of Claims 18-57 as Anticipated Under 35 USC §102(b) by Mack**

Claim 18 recites:

A controller robot for performing surgical procedures, the controller robot comprising: a robotics portion, the robotics portion comprising at least one surgical instrument unit; an workstation portion, said workstation portion comprising a display and an input device; a controller portion, the controller

portion comprising hardware and software for transforming input provided by a surgeon operator via the interface portion into motion of the at least one surgical instrument; wherein the robotics portion further comprises force detection sensors for determining force reflectance from tissue in contact with the at least one surgical instrument.

[Emphasis added].

The Figure of Mack only includes the notation “Elimination of hand tremor”, which is the only aspect of the figure which can in any fashion be related to the present invention. The elimination of hand tremor at a minimum prevents any force associated with any tremor from being applied, as the underlying tremor has been eliminated.

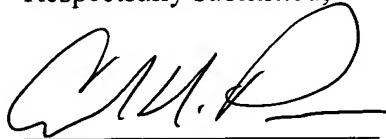
The present claim includes the limitation “further comprises force detection sensors for determining force reflectance from tissue in contact with the at least one surgical instrument.” Mack does not include any discussion whatsoever of the measuring of reflectance forces, i.e., resistive forces imposed on a surgical instrument as a result of tissue contact. Accordingly, Mack cannot anticipate claim 18 of the present invention. As claims 19-57 each depend from claim 18, and accordingly incorporate the limitations of claim 18, claims 19-57 accordingly include this limitation which is not taught by Mack, and Mack accordingly cannot anticipate these claims either.



## CONCLUSION

Applicant believes that all outstanding the grounds raised by the Examiner have been addressed and respectfully submits the present case is in condition for allowance, early notification of which is earnestly solicited. Should there be any questions or outstanding matters, the Examiner is cordially invited and requested to contact Applicant's undersigned attorney at his number listed below.

Respectfully submitted,

A handwritten signature in black ink, appearing to read 'C.H. Pierce', written over a horizontal line.

Carl H. Pierce  
Reg. No. 45,730  
Reed Smith LLP  
2500 One Liberty Place  
1650 Market Street  
Philadelphia, PA 19103-7301  
(215) 241-7970

Dated: September 11, 2009